Code No: **R164102D** **R16** **Set No. 1**

IV B. Tech I Semester Supplementary Examinations, November - 2022

INSTRUMENTATION

(Electrical and Electronics Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B

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PART–A ***(14 Marks)***

1. a) Distinguish between primary electrical transducers and Secondary electrical transducers. [3]
   b) List the applications of thermistors. [2]
   c) What is a Strain gauge and give its significance. [2]
   d) List the advantages of digital voltmeters. [2]
   e) Distinguish between Free running Sweep and Triggered Sweep. [3]
   f) Define Total Harmonic Distortion (THD). [2]

PART–B ***(4x14 = 56 Marks)***

2. a) Explain the following terms w.r.t measurements:
      i) Static Error ii) Precision iii) Repeatability iv) Uncertainty [4]
   b) Explain the techniques of Pulse – time modulation and pulse – code modulation and give their relative merits. [10]

3. a) List the advantages and disadvantages of Electrical transducers. [7]
   b) The output of a LVDT is connected to a 4 V voltmeter through an amplifier whose amplification factor is 500. An output of 1.8 mV appears across the terminals of LVDT when the core moves through a distance of 0.6 mm. If the milli-voltmeter scale has 100 divisions and the scale can read to ¼ of a division, calculate: i) The sensitivity of LVDT. ii)The resolution of the instrument in mm [7]

4. a) Explain briefly the following types of pressure elements:
      i) Bourdon tube ii) Diaphragm and iii) Bellows [7]
   b) With a neat sketch explain the working of an optical pyrometer? [7]

5. a) Explain about the 3 ½ - digit display in a Digital meter. [7]
   b) Explain the working of a Dual – Slope Integrating type digital voltmeter with a neat diagram. [7]

6. a) With a neat block diagram explain the working of general purpose Cathode ray oscilloscope. [7]
   b) Explain briefly about data loggers and mention its applications. [7]

7. Write short notes on the Following:
   i) Peak reading Voltmeter
   ii)Heterodyne wave analyzer [14]